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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,252	07/16/2003	Kuo-Feng Chen	67,200-569A	1265

7590

02/08/2005

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EXAMINER

STINSON, FRANKIE L

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/621,252

Applicant(s)

KUO-FENG ET AL.

Examiner

FRANKIE L. STINSON

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2131 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 29-31 is/are allowed.
- 6) ☒ Claim(s) 21-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date. _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1746

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 28 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant now claims in claim 28 that the apparatus is constructed to wet the wafer with the force being of insufficient force, that no debris removal occurs. Support for the feature cannot be found in the specification as originally filed.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. in view of Kanno (U. S. Pat. No. 5,934,566)

Re claim 21, Abe is cited disclosing an apparatus comprising:

a wafer jig (see fig. 13) constructed and arranged to carry the semiconductor wafer therein, and wherein the wafer jig includes an opening therein for exposing a top surface of the semiconductor wafer;

a wetting solution connected to a spray module and pump (see col. 5, line 24-28, where pump has been defined by the examiner as “an apparatus or machine for moving or altering the pressure of fluids in confined spaces, as by suction or pressure”, Random House College Dictionary, 1980. The pressurized tank is clearly a pump by definition and is clearly the functional equivalent or applicant’s pump MPEP 2144.06 **SUBSTITUTING EQUIVALENTS KNOWN FOR THE SAME PURPOSE**) for supplying wetting solution through a spray module and onto a semiconductor wafer carried in the wafer jig and wherein the spray module includes a plurality of spray nozzles (711, 712, 721, 722) so that the entire surface of the wafer is covered by the wetting surface that differs from the claim only in the recitation of the wetting solution supply tank, the nozzles constructed and arranged to spray wetting solution having particles less than 100 micrometers and the pre-treating the wafer prior to electroplating. The patent to Kanno is cited disclosing in an apparatus for treating a wafer where there is provided a supply tank (not shown, see col. 5, lines 24-28). It therefore would have been obvious to one having ordinary skill in the art to modify the apparatus of Abe, to include a tank for the wetting solution as taught but Kanno, since this arrangement is typical in the art and since Abe disclose that the “whole automatic washing system is disposed within the housing 10” (col. 3, lines 6-100). In regard to the wetting solution having particles less than 100 micrometers. Kanno is again cited disclosing the particle size as claimed. It therefore would have been obvious to include with the spraying means (711, 712, 721 and 722) in Abe, means for providing a wetting solution with particles/droplets (see col. 11, lines 41-45) since Kanno discloses that the solution with particles/droplets provides a more effective

Art Unit: 1746

wash (col. 11, lines 12-18). As for the intended use of "pre-treating a semiconductor prior to electroplating" and having the wafer "subsequently electroplated", the same has not been afforded the effect of a limitation in that it is not necessary to give life, meaning and vitality to the claim and the fails to recite any limitations to limit the apparatus for pre-treating semiconductor prior to electroplating only. This is also a statement of intended use in that no structure is provided and as claimed the applied proper art is *capable* of performing the intended use. Re claims 22 and 23, Abe discloses the spray module and jig movable/reciprocated relative to each other (see Abe col. 11, lines 27-51). Re claim 24, Abe disclose the robot (60). Re claim 25, Kanno discloses the nozzles as claimed. Re claim 26, to have the nozzles arranged in the nozzles arranged in a set of three is deemed to be an obvious matter of design in that the same is considered to be substituted equivalents in view of the modules as taught by either Abe or Kanno.

5. Claims 29-31 are allowed.

6. Applicant's arguments filed December 20, 2004 have been fully considered but they are not persuasive. It has been noted that applicant argues that the problem that the instant invention address is that difficulty to complete plate the entire surface under the bump metallurgy, however, the rejected claims are silent with respect to any feature pertaining to plating the entire surface under bump metallurgy exposed by the opening in the photoresist layer. In regard to the remarks on the Abe reference, namely that Abe is not directed to solving the problem of making an apparatus sufficient to pre-treat a semiconductor substrate with an opening in a photoresist mask in a manner to allow the semiconductor substrate to be plated through the opening in the photomask, please

Art Unit: 1746

note that the remarks are more limiting than the claims. As for Abe being not being directed to the cleaning of a semiconductor in that Abe's apparatus could not hold a wafer, this is deemed to be conjecture. Although the article being treated in Abe is square, and wafers are generally circular in shape, it was not the intention of the examiner to bodily incorporate features onto the apparatus of Abe but merely to teach a concept being old and well known. * * [T]he proper inquiry should not be limited to the specific structure shown by the references, but should be into the concepts fairly contained therein, and the overriding question to be determined is whether those concepts would suggest to one skilled in the art the modification called for by the claims. In re Van Beckum, 169 USPQ 47 (CCPA 1971). In regard to the Kanno reference being directed to a method of washing a wafer to remove debris (note instant invention specification, paragraph 0010, line 4) where the wafer is rotated while a concentrated spray of water is directed onto a narrow area and that one would not be motivated to modify Abe, buy substituting the sprayer of Kanno, because it would result in the entire surface of the wafer not being cleaned in that Abe apparatus is not capable of rotating the reticle. While it is true the Abe does not provide for rotation, Abe does provide for relative movement of the reticle by reciprocating the reticle in the holder so that the entire surface is exposed to the spray. As for Kanno providing a spray splash, thereby destroying the teachings of the Abe reference, again it was not the intent of the examiner to physically substitute one nozzle for another but the concept of providing "droplets" to wet a surface of a substrate. The Kanno reference fails to mention splash or any overspray. As for the added limitation of the wafer being electroplated has been deemed an intended use in that no specific

Art Unit: 1746

structure is associated with the limitation, i.e. the semiconductor is pretreated so that it may be electroplated "subsequently".

7. All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **FRANKIE L. STINSON** whose telephone number is (572) 272-1308. The examiner can normally be reached on M-F from 5:30 am to 2:30 and some Saturdays from approximately 7:30 am to 1:00 pm.

Art Unit: 1746

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr, can be reached on (571) 272-1700. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

fls



FRANKIE L. STINSON
Primary Examiner
GROUP ART UNIT 1746